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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/880,634	06/11/2001	Wan-Uk Choi	45145/DBP/Y35	5926

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EXAMINER	
CANTELMO, GREGG	
ART UNIT	**PAPER NUMBER**
1745	

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/880,634	CHOI ET AL.	
	Examiner	Art Unit	
	Gregg Cantelmo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 6-11* is/are pending in the application.

4a) Of the above claim(s) *7-11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the amendment received March 28, 2005:

a. Claims 1 and 6-11 are pending with claims 7-11 having been withdrawn from consideration as to non-elected inventions. Claims 2-5 have been cancelled as per Applicant's request;

b. The particular prior art rejection is withdrawn in light of the amendment. However the reference is still applied to the amended claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-012017 (Ishii et al.) in view of either U.S. patent No. 6,350,544 (Takami), JP 63-3256721 (Murakami et al.), or Otani, "Catalytic Graphitization Phenomenon", (hereinafter referred to as Otani).

Ishii et al. discloses of a Lithium battery negative electrodes containing graphite and at least two other elements, including boron and one of iron, silicon, nickel and titanium. The amount of boron is 0.05-5 % by weight, and the amount of metallic element is 0.01-5 % by weight (See paragraph 10 of English machine translation.)

The difference between the instant claim and Ishii et al., is that the claim has been amended to exclude the specific metallic elements recited in Ishii et al. (Fe, Si, Ni, P, Ti, Ga, Sn, Ge, Sb, Ti and Al).

According to Ishii et al., as a compound containing the metallic element to add, metals, such as B, Fe, Si, Ti, and nickel, those oxides, carbide, and a nitride are desirable in respect of the crystallinity of the graphite particle obtained (paragraph [0013]).

Thus it would appear that the specific listing of B, Fe, Si, Ti and Ni as recited throughout the disclosure of Ishii et al., can be substituted with similar elements and provide the same catalytic property to the mixture.

Takami discloses that Mg, Al, Si, Ca, Sn and Pb are all suitable graphitization catalysts (col. 3, ll. 35-40). Furthermore Takami teaches of adding other elements such as Fe, Co, Ni, Ca, Mn, Al and Si to the precursor (col. 8, ll. 43-50). Takami therefore shows equivalence in grouping previously claimed materials such as Si, Sn and Al with currently claimed materials Mg and Ca as well as previously claimed materials Al, Si, Fe and Ni with currently claimed materials Co, Ca and Mn. Murakami discloses that Fe, Co, P, Sn, Ni or Sb are known graphitization catalysts and can be substituted for one another to provide equivalent degrees of graphitization (abstract). Otani discloses in the tables provided on pages 120 and 121 of various elements which are graphitization catalysts. The elements include B, Al, Si, Mg, Ca, Ti, V, Cr, Mo, W, Mn, Fe, Co, Mi.

Furthermore, and notably with the transition element group of Mn, Ni, Fe, Cr, Co, Cu, Mo and W, and the Ti and Zr grouping, one of ordinary skill in the art would have

recognized that, given the relative locations of these elements in the periodic table, such elements have sufficiently similar properties and can be interchanged as desired while not adversely affecting the graphitization process.

It is furthermore apparent from the instant application that a vast majority of additive elements can be used as a catalytic material and that the particular elements limited in the amended claim lack any criticality from the broadly disclosed, and previously claimed larger genus.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ishii et al., by using any number of graphitization catalysts taught by either Takami, Murakami or Otani since they would have provided effective catalyzing properties for converting the carbon material of Ishii et al. into a graphite material. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

With respect to the properties of claim 6:

Since Ishii et al. in view of either Takami, Murakami or Otani discloses materials identical to those claimed and discussed in the instant application, the properties of the materials, including x-ray diffraction spectra, would be expected in the combination and thus identical to those claimed by applicants.

Response to Arguments

3. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nazri, of record, in view of either U.S. patent No. 6,350,544 (Takami), JP 6-3256721 (Murakami et al.) or Otani, of record.

Nazri disclose Lithium battery negative electrode materials having active materials which are composites of metals and/or nonmetals in a conductive matrix. (Column 3, lines 3-8.) A preferable material for the matrix is graphite. (Column 3, lines 60-62). Boron is a preferred non-metallic element and Pb, Sn, Bi, Al, Ga, Ge, In, and Ti are preferred metallic elements. (See column 6, lines 59-67.) Preferred embodiments disclose forming composite materials by combining silicon, boron, phosphorous or sulfur in 0.01-0.15 M/l concentrations with graphite which is 15 weight percent in a cyclohexane slurry. (See column 4, lines 35-47.) Since the density of cyclohexane is 0 779 g/cmq, 15 weight percent graphite in the slurry is .1 167 g/cm3. The boron concentration is about .00165 g/cm . Thus the boron in the composite is about 0.00165/.1 167 or about 1.4 weight percent. A similar concentration (0.1M/l) of aluminum, for example, would provide a composite with about 2.3 weight percent aluminum.

The difference between the instant claim and Nazri, is that the claim has been amended to exclude the specific metallic elements recited in Nazri (Fe, Si, Ni, P, Ti, Ga, Sn, Ge, Sb, Ti and Al).

Nazri discloses a list of preferred metallic element additives. However the fact that such are preferred does not exclude the exchange of these elements with other additives.

Takami discloses that Mg, Al, Si, Ca, Sn and Pb are all suitable graphitization catalysts (col. 3, ll. 35-40). Furthermore Takami teaches of adding other elements such as Fe, Co, Ni, Ca, Mn, Al and Si to the precursor (col. 8, ll. 43-50). Takami therefore shows equivalence in grouping previously claimed materials such as Si, Sn and Al with currently claimed materials Mg and Ca as well as previously claimed materials Al, Si, Fe and Ni with currently claimed materials Co, Ca and Mn. Murakami discloses that Fe, Co, P, Sn, Ni or Sb are known graphitization catalysts and can be substituted for one another to provide equivalent degrees of graphitization (abstract). Otani discloses in the tables provided on pages 120 and 121 of various elements which are graphitization catalysts. The elements include B, Al, Si, Mg, Ca, Ti, V, Cr, Mo, W, Mn, Fe, Co, Mi.

Furthermore, and notably with the transition element group of Mn, Ni, Fe, Cr, Co, Cu, Mo and W, and the Ti and Zr grouping, one of ordinary skill in the art would have recognized that, given the relative locations of these elements in the periodic table, such elements have sufficiently similar properties and can be interchanged as desired while not adversely affecting the graphitization process.

It is furthermore apparent from the instant application that a vast majority of additive elements can be used as a catalytic material and that the particular elements limited in the amended claim lack any criticality from the broadly disclosed, and previously claimed larger genus.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Nazri, by using any number of graphitization catalysts taught by either Takami, Murakami or Otani since they would have provided effective catalyzing properties for converting the carbon material of Ishii et al. into a graphite material. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

With respect to the properties of claim 6:

Since Nazri in view of either Takami, Murakami or Otani discloses materials identical to those claimed and discussed in the instant application, the properties of the materials, including x-ray diffraction spectra, would be expected in the combination and thus identical to those claimed by applicants.

Response to Arguments

5. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

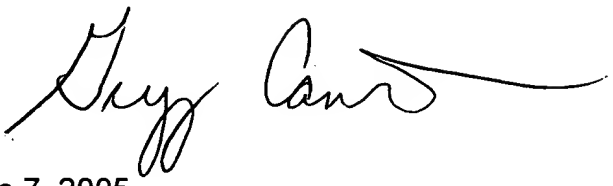
6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (571) 272-1283. The examiner can normally be reached on Monday to Thursday from 9 a.m. to 6 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. FAXES received after 4 p.m. will not be processed until the following business day. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregg Cantelmo
Primary Examiner
Art Unit 1745

gc



June 7, 2005